

GLC 2200 Lubrication Controller

3A2960D
EN

For controlling and monitoring an automated lubrication system.

Not approved for outdoor use or use in explosive atmospheres or hazardous locations.

Model: 24N468



Important Safety Instructions
Read all warnings and instructions in this
manual. Save these instructions.



Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to Procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.



WARNING



EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working Pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

Component Identification

Keypad, Display, and Icons

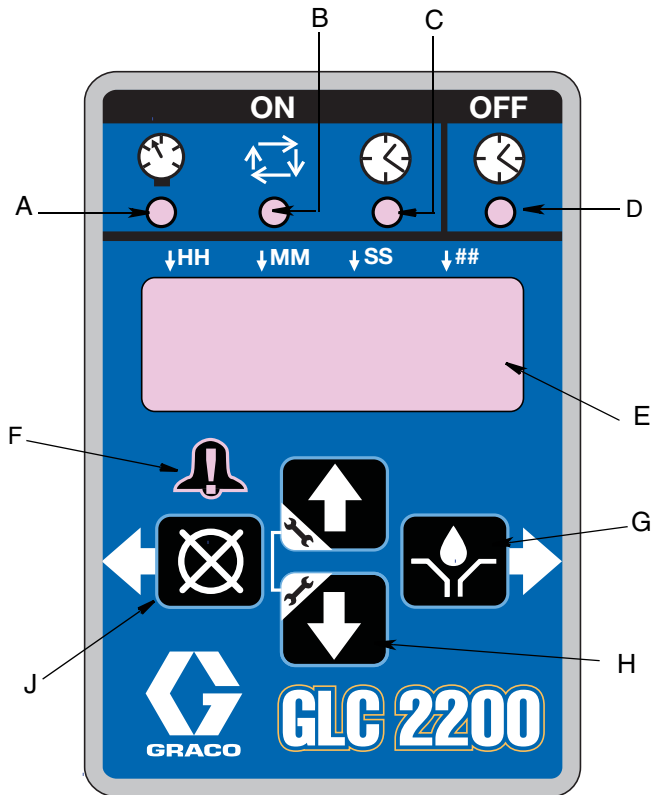
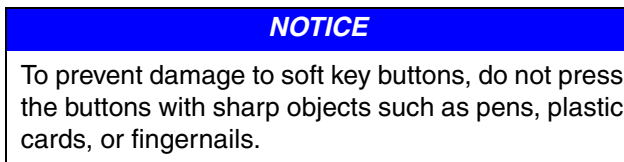


FIG. 1

Pump ON LEDs (A, B, C)

- A Pressure Control LED: In RUN MODE illuminates indicating function mode that is currently running.
- B Cycle Control LED: In RUN MODE illuminates indicating function mode that is currently running.
- C Time Control LED: In RUN MODE illuminates indicating function mode that is currently running.

Pump OFF LED (D)

- In RUN MODE this LED illuminates when in the OFF or RESET portion of the RUN CYCLE.

Display (E)

- A blinking field on the display indicates the controller is in SETUP MODE.
- In RUN MODE numbers on the display will not blink.

Alarm LED (F)

Illuminates when any alarm is detected. When an alarm is active an error code displays and an audible alarm also sounds.

RIGHT Direction Arrow / MANUAL RUN / ENTER (G)

- In SETUP MODE, saves entry, moves cursor in display one field to the right or to the next setup step.
- In RUN MODE activates the pump for one complete ON cycle if actuated during the OFF portion of the RUN cycle.

UP and DOWN Direction Arrows (H)

- Press and hold both the UP and DOWN Arrow keys together for 3 seconds to enter SETUP MODE.
- In SETUP MODE increase or decrease number values associated with the various RUN MODES.

LEFT Direction Arrow / RESET (J)

- In SETUP MODE moves cursor in display one field to the left.
- In RUN MODE, Pressing RESET starts a PUMP OFF cycle.
- In ALARM MODE, Press once to clear buzzer; Press and hold for 3 seconds to clear warning and switch controller to OFF MODE.

Installation

Typical Installation

The installation shown in FIG. 2 is only a guide for selecting and installing system components. Contact your Graco distributor for assistance in planning a system to suit your needs.

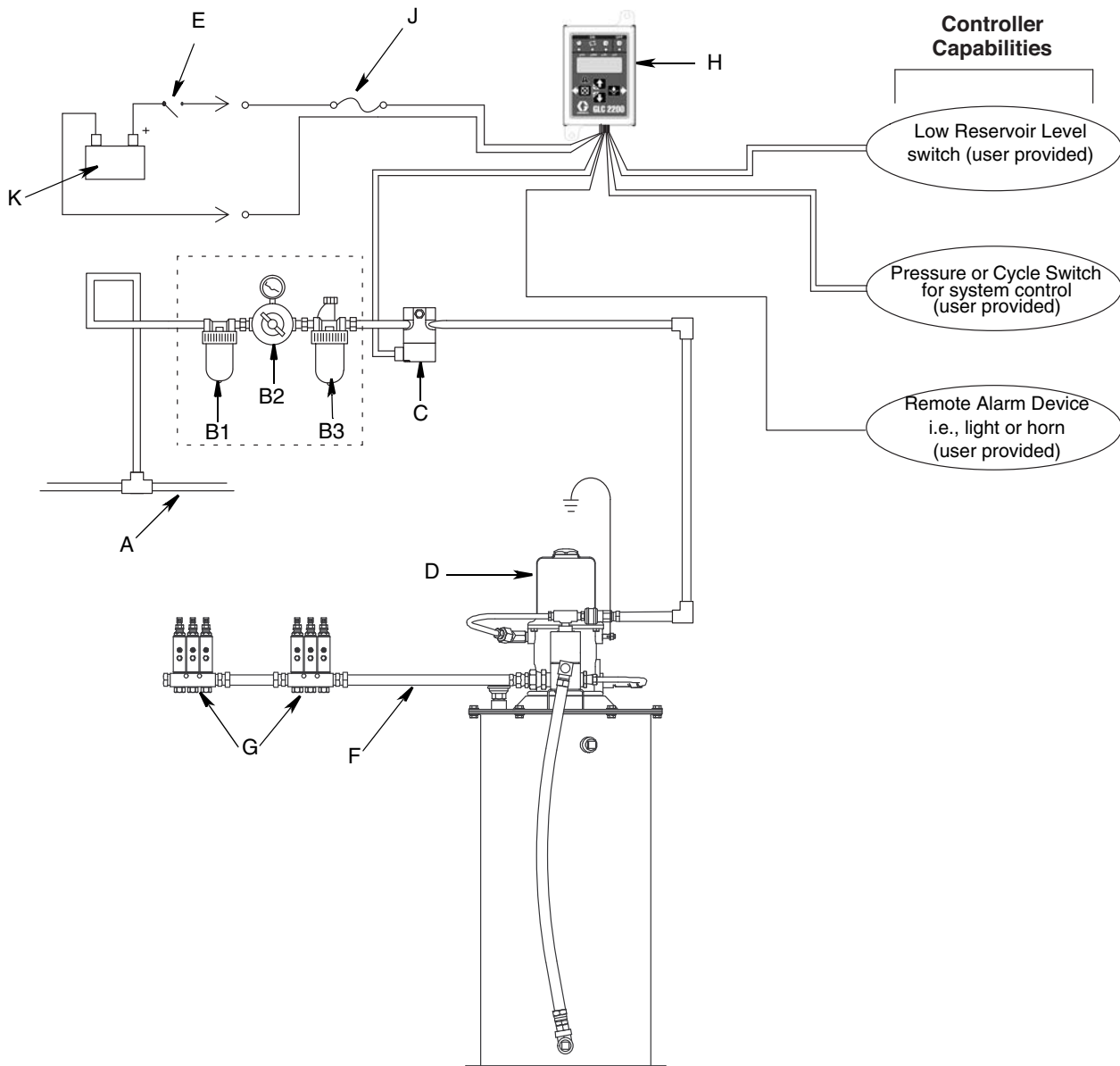


FIG. 2

- | | |
|--|--|
| A Main Air Supply | E Ignition Switch |
| B Filter/Regulator/Lubricator Assembly | F High-Pressure Lubricant Supply Lines |
| B1 - Filter | G Injector Banks |
| B2 - Regulator | H Lubrication Controller |
| B3 - Lubricator | J In-line Fuse |
| C Air Solenoid Valve | K Power Source |
| D Pump Module | |

Installing the Lubrication Controller

AUTOMATIC SYSTEM ACTIVATION HAZARD						
Unexpected activation of the system could result in serious injury, including skin injection and amputation.						
This device has an automatic timer that activates the pump lubrication system when power is connected or when exiting the programming function. Before you install or remove the Lubrication Controller from the system, disconnect and isolate all power supplies and relieve all pressure.						

1. Select a flat surface to install the Lubrication Controller. Drill mounting holes. Refer to Mounting Hole Layout Provided in the Technical Data section of this manual, page 20.
2. Align junction box with predrilled holes (FIG. 3, (a)). Use two screws (not provided) to secure junction box to mounting surface.



FIG. 3

System Configuration and Wiring

The System Configuration Diagrams (FIG. 4 - FIG. 6), Sensor Wiring Diagrams (FIG. 8 - FIG. 9) and Wiring Diagrams (FIG. 7) on the following pages, show typical Injector, Series Progressive and Dual Line lubrication system configurations.

Refer to Table 1, 2 and 3 to determine the Required System Configuration, Sensor Configuration and Wiring Diagram to use to setup your system.

Table 1: System Configurations

System	Figure	Page
Injector	4	6
Series Progressive	5	7
Dual Line	6	8

Table 2: Sensor Wiring Configurations

Sensor	Figure	Page
Dry Contact	7	10
Source Switch	8	10

Table 3: Modes of Operation

Mode	Power	Figure	Page
Time ON/Time OFF	DC	9	9
Cycle ON or Pressure ON/Time OFF	DC	9	9
Low Level Switch		9	9

System Configuration

Injector System

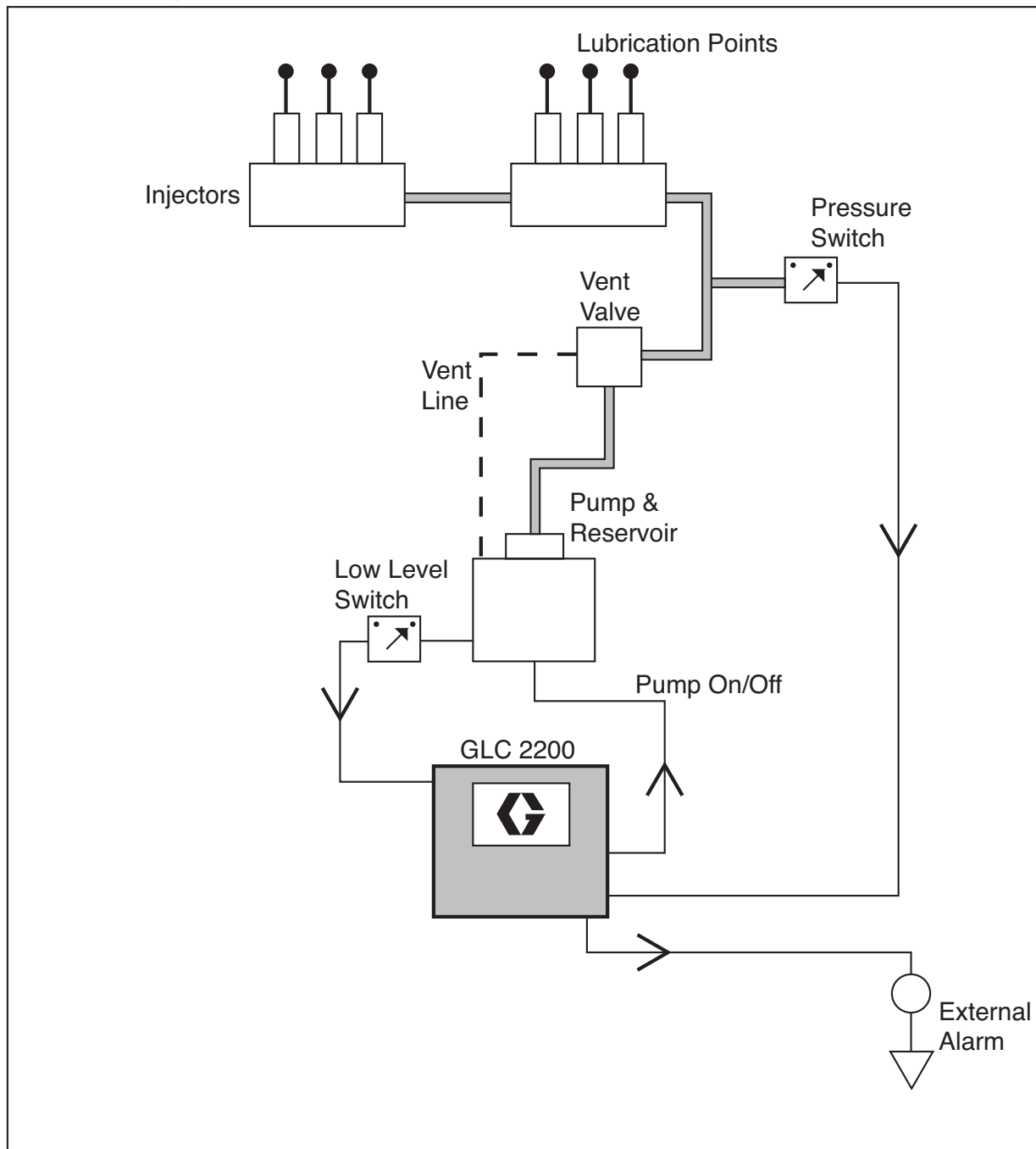


FIG. 4

Divider Valve System

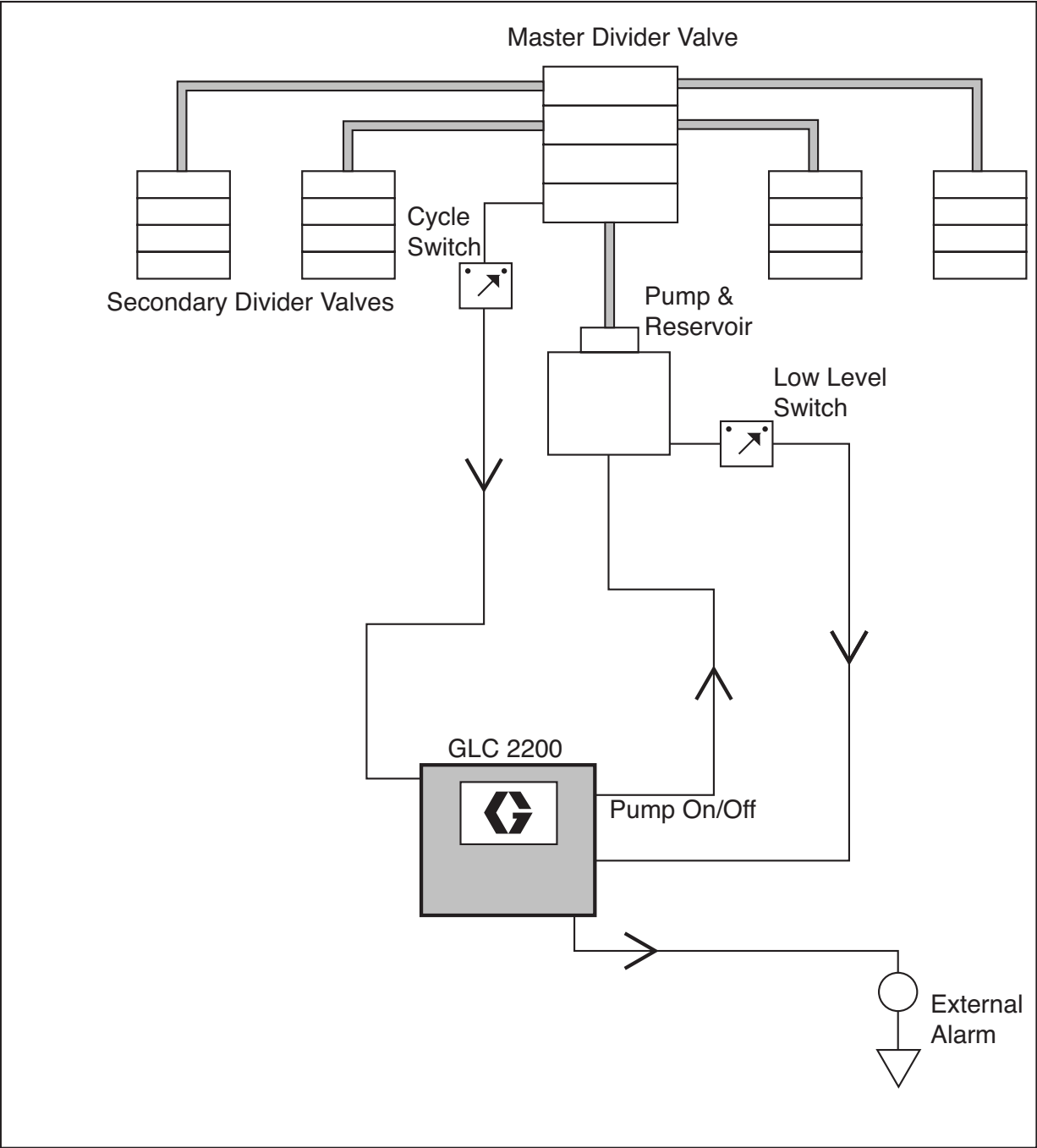


FIG. 5

Dual Line System

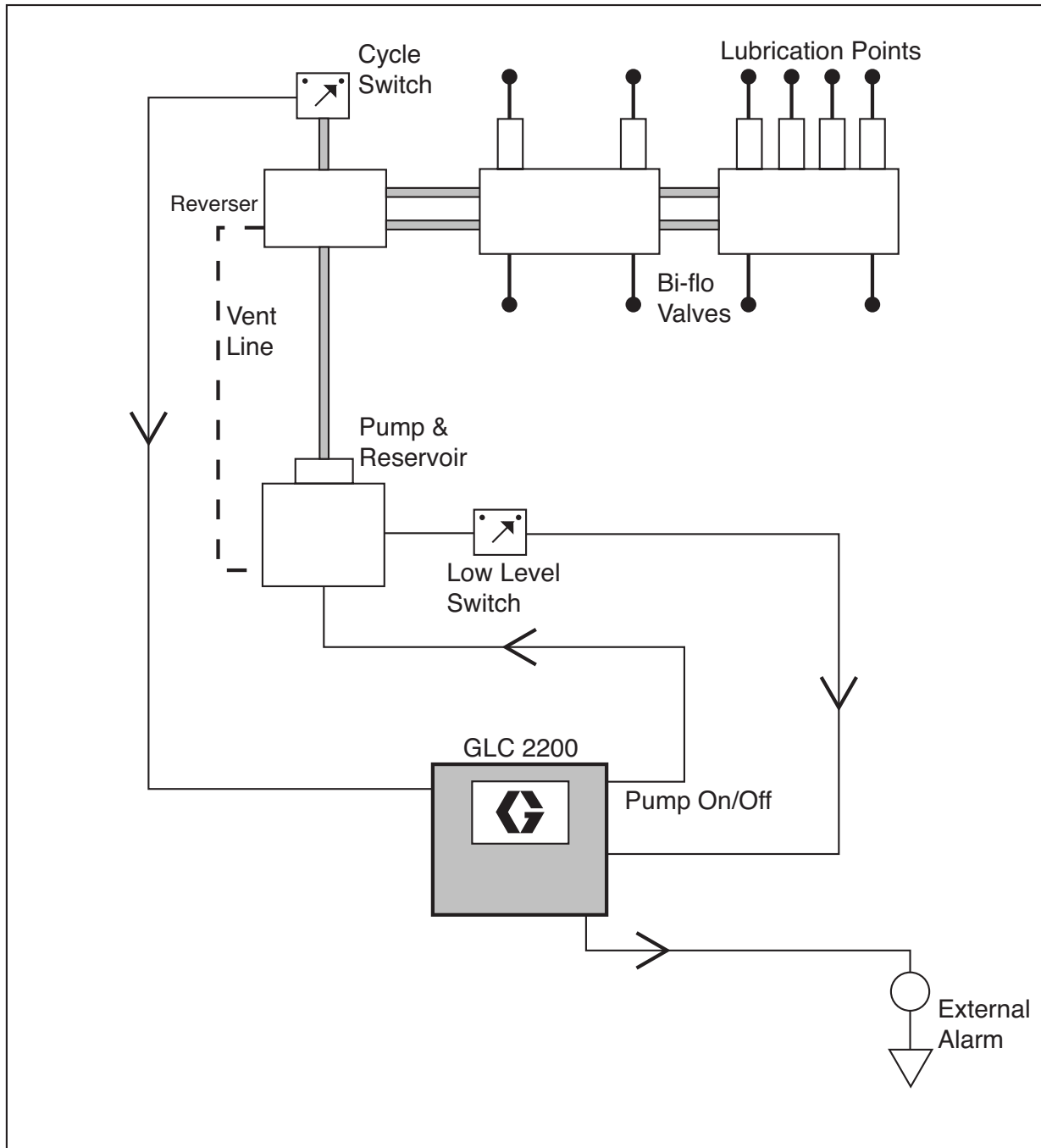


FIG. 6

Wiring Diagram

Modes of Operation: Optional I/O Wiring Diagram

Used with all modes of GLC2200 Operation

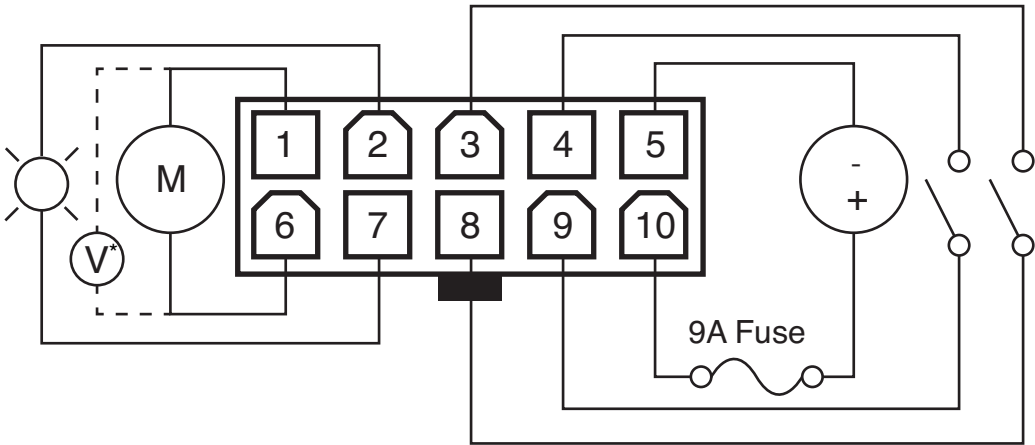


FIG. 7

*Normally open vent valve for use with Injector-based systems

Wiring Key

Pin	Description	+/-
1	Pump	-
2	Alarm	-
3	Low Level	-
4	Pressure/Cycle Switch	-
5	Voltage Input	-
6	Pump	+
7	Alarm	+
8	Low Level	+
9	Pressure/Cycle Switch	+
10	Voltage Input	+

Connector Identification Label

PIN	1	2	3	4	5
	9A	2A			
				P/C	+9V +30V
PIN	6	7	8	9	10

Sensor Wiring Configurations

DRY CONTACT SWITCH

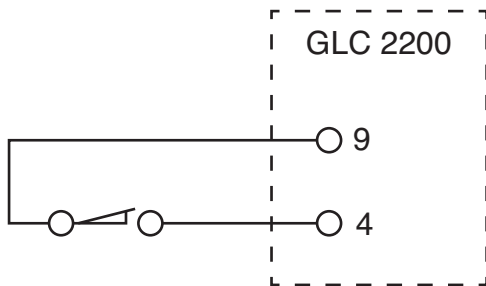


FIG. 8

SOURCE SWITCH - 2 or 3 Wire Type

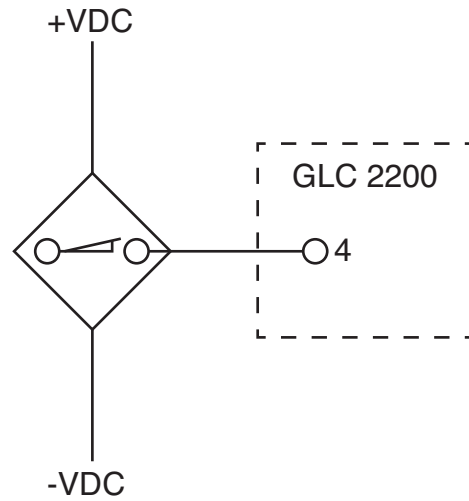


FIG. 9

Setup

Entering SETUP MODE

1. Press both the UP and DOWN ARROW buttons together for three seconds.

NOTE:

- If a button is not pushed for 1 minute, the controller returns to the start of an OFF cycle.
- Setting changes are not stored unless programming is completed and setup mode is exited normally by pressing the ENTER button.
- A blinking dot below the HH, MM, SS, or ## indicates the field currently being programmed.

Programming ON Duration

- **on:Pr**, **on:CY** or **on:ti** appears on the display identifying the function you are programming (see below).

on:Pr on:CY on:ti

- The illuminated LED below the related symbol on the controller label also indicates the function.

NOTE: Selection **on:Pr**, **on:CY** or **on:ti** designates the way the pump run time is controlled:

- **on:Pr** = Pressure Control, reaching a specific pressure threshold measured by an external pressure switch



on:Pr

- **on:CY** = Cycle Control, completing a specific number of cycles of an external prox/cycle switch



on:CY

- **on:ti** = Time Control, a specific duration of time elapses



on:ti

Pressure Control (on:Pr) ON Setup

1. Use the UP or DOWN ARROW until **on:Pr** displays.

on:Pr



2. Press the ENTER button.



3. Pressure control is an ON / OFF selection only. After you press the ENTER button, the controller saves the Pressure Control information and moves to setting Backup Time, page 12.

Cycle Control (on:CY) ON Setup

1. Use the UP or DOWN ARROW until **on:CY** displays.

on:CY



2. Press the ENTER button.



The first number displayed after the **on:CY** is entered, blinks, indicating the device is ready to program the number of cycles.

NOTE: The cycle entry is a 2-digit number. A leading zero (0) must be entered in the first field if the number of cycles is fewer than 10.

3. Program the cycles by pressing the UP or DOWN ARROW to move up or down through the numbers 0-9.
4. When the correct first digit is displayed, press the ENTER button.

The cursor automatically moves to the second number field and flashes.

Use the UP or DOWN ARROW to scroll through the numerals 0-9 until the desired number appears in the second cycle number field.

5. Press the ENTER button. After you press the ENTER button, the controller saves the Cycle Control information and moves to setting Backup Time, page 12.

Time Control (on:ti) ON Setup

1. Use the UP or DOWN ARROW to cycle through until **on:ti** displays.

on:ti



2. Press ENTER.



3. To set the ON time use the UP or DOWN ARROW to scroll through the numerals 0-5 until the desired number appears in the first Minutes (MM) field.

NOTE:

- The MM field is a 2-digit number.
- A leading zero (0) must be entered in the first field if the number of minutes is fewer than 10.
- The highest number that can be set for the MM field value is 59.

4. Press the ENTER button.

The next MM number field to the right flashes, indicating it is ready for programming.

5. Use the UP or DOWN ARROW to scroll through the numerals 0-9 until the desired number appears in the second MM number field.

6. Press the ENTER button.

The next number field to the right flashes indicating it is ready to program the Seconds (SS) fields.

NOTE:

- The Seconds (SS) field is a 2-digit number.
 - A leading zero (0) must be entered in the first field if the number of seconds is fewer than 10.
 - The highest number that can be set for the SS field value is 59.
7. Repeat steps 3 - 6 to set the SS fields.
 8. Press the ENTER button. After you press the ENTER button the controller automatically switches to the OFF TIME SETUP MODE.

Backup Time

In both Cycle and Pressure Modes, a maximum run Time (Backup Time) for the lubrication period must be set up. If this Time expires before the lubrication is completed an alarm/warning is triggered and the pump stops.

To determine the Backup Time, Graco recommends the user verify the length of time it takes to complete a typical cycle and double that value.

Backup Time is setup after Cycle or Pressure Sensor Setup is complete.

NOTE:

- The LED below the clock in the ON field lights, indicating the Backup Time is being programmed.



- BACKUP (ON) Time is set as minutes and seconds (MM:SS) only.
- The small flashing LED under the MM indicates you are setting minutes.
- The first field (left side of display) blinks indicating the device is ready for you to begin programming.

Programming Backup Time

NOTE: When programming a time of less than 10 minutes you **must** program the leading zero in the first number field and press the ENTER button.

1. To set the ON Time use the UP or DOWN ARROW button to scroll through numerals 0 to 5 until the desired number appears in the first MM (minutes) field.



2. Press the ENTER button. The next MM number field to the right flashes indicating it is ready for programming.



3. Use the UP or DOWN ARROW button to scroll through numerals 0 to 9 until the desired number appears in the second MM number field.



4. Press the ENTER button.



The next number field to the right flashes and the LED lights under SS; indicating it is ready to program the seconds fields.

5. Repeat steps 1 - 4 to set the SS (seconds) fields.
6. After pressing the ENTER button to set the last SS field, all the programmed ON Time information is saved.



The controller automatically switches to the OFF Time SETUP MODE.

Programming OFF TIME Duration

After setting the parameters for either Pressure (Pr), Cycle (CY) or Time (Ti) ON Modes, the OFF TIME or PUMP REST CYCLE must be set up.

The LED below the OFF TIME Symbol Illuminates.

NOTE:

- The HH field is a 2-digit number.
- A leading zero (0) must be entered in the first field if the number of hours is fewer than 10.
- The highest number that can be set for the HH field value is 99.



To set the OFF Time:

1. Use the UP or DOWN ARROW to scroll through the numerals 0-9 until the desired number appears in the first Hours (HH) field.



2. Press ENTER.



The next HH number field to the right flashes, indicating it is ready for programming.

3. Use the UP or DOWN ARROW to scroll through the numerals 0-9 until the desired number appears in the second HH field.
4. Press the ENTER button.

The next number field to the right flashes indicating it is ready to program the Minutes (MM) fields.

NOTE:

- The MM field is a 2-digit number.
- A leading zero (0) must be entered in the first field if the number of minutes is fewer than 10.
- The highest number that can be set for the MM field value is 59.

5. Repeat steps 1 - 4 to set the MM fields.

6. Press the ENTER button to lock in the last MM field.

The controller automatically switches to the LOW LEVEL SETUP MODE.

Programming the Low Level Setting

NOTE: If LOW LEVEL is not used (i.e., Low Level inputs are not connected), configuring the Low Level Setting is still required. The unit's default settings can be used.

LL:01 displays. This is the default low level setup when working with a standard, normally open, low level switch.

LL:01

The unit will enter a low level fault condition after the switch input is closed for more than 1 second when the unit is in the ON portion of the RUN MODE.

1. Use the UP or DOWN ARROW until LL:02 displays. This will set the controller up to use a "paddle-style" low level algorithm (like the Graco G3 grease units). To ensure a low level condition has been met in this mode, 10 consecutive low level triggers must be detected. If a low level trigger is not detected in 30 seconds of run mode, the count is reset to zero.

LL:02



2. Press the ENTER button.



NOTE: When the user exits SETUP MODE:

- An alarm sounds briefly and LED lights indicating the new programming settings and OFF TIME information are saved.
- The display shows the revision level.
- The controller goes to the beginning of a PUMP OFF Cycle.

Operation

Run Mode

The controller is in Run Mode providing the following circumstances are present:

- The controller is not in SETUP MODE.
- An Alarm is not active.

Pressure Mode: Pump ON

The display indicates the amount of backup time remaining (see Pressure Mode (on:Pr) ON setup, page 12).

- The Pressure ON LED illuminates and the pump output is enabled as long as the system is in the Pump ON state.
- If the pressure switch input is activated before the Backup Pump On Time expires, the system switches to a Pump OFF state.
- If the pressure switch is NOT activated before the Backup Pump On Time expires the system faults, goes to the Pump OFF state and pauses until the alarm is cleared.
- Pump ON time is shown in MM:SS (minutes:seconds)

Pressure Mode: Pump OFF

The display indicates the amount of time remaining in the pump OFF cycle, counting down the Pump OFF time value (see Programming OFF Time Duration, page 12).

- The pump output is disabled during the Pump OFF time.
- The Time OFF LED is illuminated as long as the system is in the Pump OFF state.
- Pump OFF time is shown in HH:MM (hours:minutes) or MM:SS if the time remaining is less than an hour.

Cycle Mode: Pump ON

The display alternates between the number of cycles remaining and indicates the amount of time remaining in the pump cycle, counting down the Backup Pump ON time value (see Cycle Mode (on:CY) ON Setup, page 11).

- The Cycle ON LED illuminates and the pump output is enabled as long as the system is in the Pump ON state.
- If the Input Cycle Switch is activated the amount of times equal to the Cycle Definition variable before the Backup Pump On Time expires, the system switches to a Pump OFF state.
- If the cycle switch is NOT activated the number of times equal to the cycle definition variable before the Backup Pump On Time expires the system faults, goes to the Pump OFF state and pauses until the Alarm is cleared.
- Pump ON time is shown in MM:SS (minutes:seconds)

Cycle Mode: Pump OFF

The display indicates the amount of time remaining in the pump OFF cycle, counting down the Pump OFF time value (see Programming OFF Time Duration, page 12).

- The pump output is disabled during the Pump OFF time.
- The Time OFF LED illuminates as long as the system is in the Pump OFF state.
- Pump OFF time is shown in HH:MM (hours:minutes) or MM:SS if the time remaining is less than an hour.

Timer Mode: Pump ON

The display indicates the amount of time remaining in the pump cycle, counting down the Pump ON time value (see Time Control (on:ti) ON Setup, page 12).

- The Pump output is enabled.
- Pump ON time is shown in MM:SS (minutes:seconds).

Timer Mode: Pump OFF

The display indicates the amount of time remaining in the pump OFF cycle, counting down the Pump OFF time value (see Programming OFF Time Duration, page 12).

- The Time OFF LED illuminates and the pump output is disabled during the Pump OFF time.
- Pump OFF time is shown in HH:MM (hours:minutes) or MM:SS if the time remaining is less than an hour.

Alarm Operation

When an alarm situation occurs:

- pump operation is immediately disabled,
- the front panel Alarm LED illuminates,
- an error code displays
- an audible alarm sounds
- the alarm output contact activates



Press the Reset button once to clear buzzer; press and hold for 3 seconds to clear alarm and switch controller to OFF MODE.



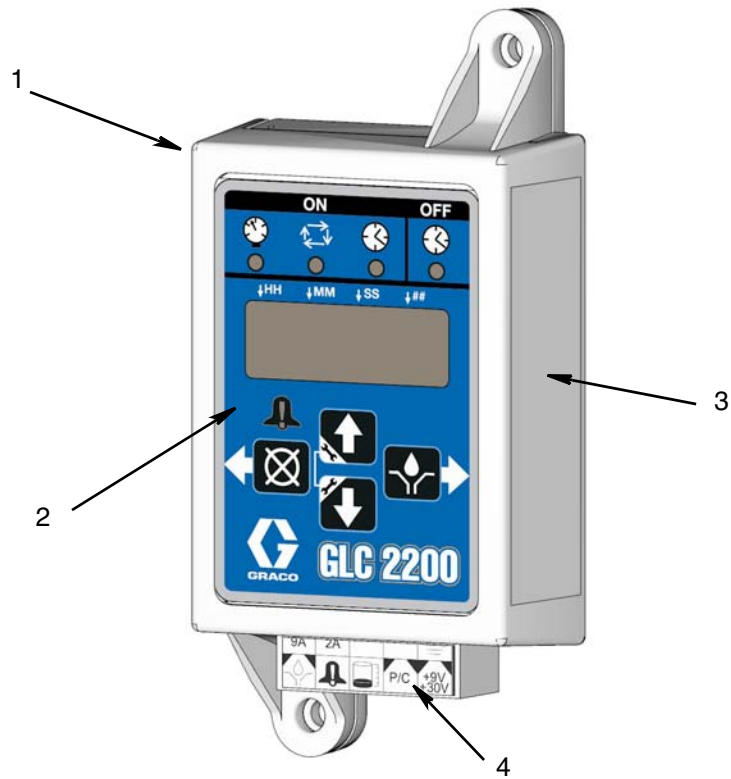
See Alarm Types and Messages Table, page 16 for additional information related to alarms and alarm messages.

Alarm Types and Messages

Alarm Type	Error Code	Description	Things to Check/Do
Low Level	Er:LL	Low lubricant level	Refill lubrication reservoir. If low level fault occurs unexpectedly verify wiring and programming setup.
Cycle	Er:Cy	Backup time expired prior to receiving programmed number of cycle counts	Inspect lubrication system for broken or plugged lines. Confirm pump is operating correctly. Inspect wiring and switch. Confirm that sufficient backup time was programmed for environment conditions (e.g., slower system response in cold temperatures) Verify programming.
Pressure	Er:Pr	Backup time expired prior to receiving pressure switch input.	Inspect lubrication system for broken or plugged lines. Confirm pump is operating correctly. Confirm vent valve is operating correctly. Inspect wiring and switch. Confirm that sufficient backup time was programmed for environment conditions (e.g., slower system response in cold temperatures). Verify programming.
System Fault	Er:Sy	Internal system error occurred.	Cycle power. If the system error persists contact Graco Customer Support.

Parts

Ref.	Description	Qty
1	BOX, enclosure	1
2	LABEL, control, overlay	1
3	LABEL, serial, name	1
4	LABEL, connector	1



Troubleshooting

Description	Problem	Solution
Unit does not power on or display is dim/unresponsive	Incorrect or loose wiring	Refer to installation instructions beginning on page 4.
	Input voltage is out of range	Confirm power source is between 9 and 30 VDC.
	Tripped external fuse	Confirm that none of the devices or wiring connected to the controller are causing a short circuit connection. Replace fuse. If fuse trips again, contact Graco Customer Support.

Program Settings

Description	Modes of Operation Maximum / Minimum and Additional Comments
PUMP ON, page 11	Pressure, Cycle, Time
PRESSURE CONTROL, page 11	MM:SS (00:01 - 59:59)
CYCLE CONTROL Setup, page 11	Cycles = 01 - 99
BACKUP TIME Setup, 12	MM:SS (00:01 - 59:59)
TIME CONTROL, page 12	MM:SS (00:01 - 59:59)
PUMP OFF Setup, page 13	Time
	Pump OFF Time: HH:MM (00:01 - 99:59)
LOW LEVEL, page 13	LL:01 = Default single activation
	LL:02 = "Paddle Style" - 10 count activation

Accessories

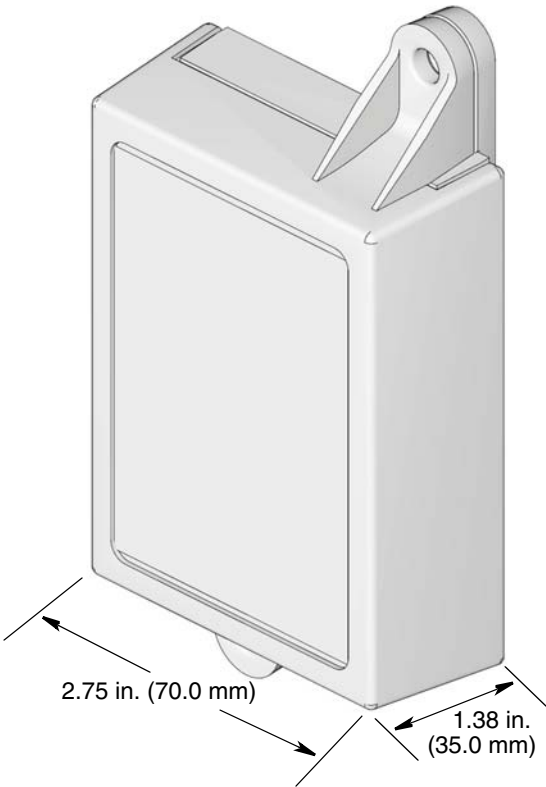
Related Kits

Kit No.	Description
24P314	GLC2200 Wiring Harness Kit
24P686	Single Connector Kit
24P687	Multiple Connector Kit

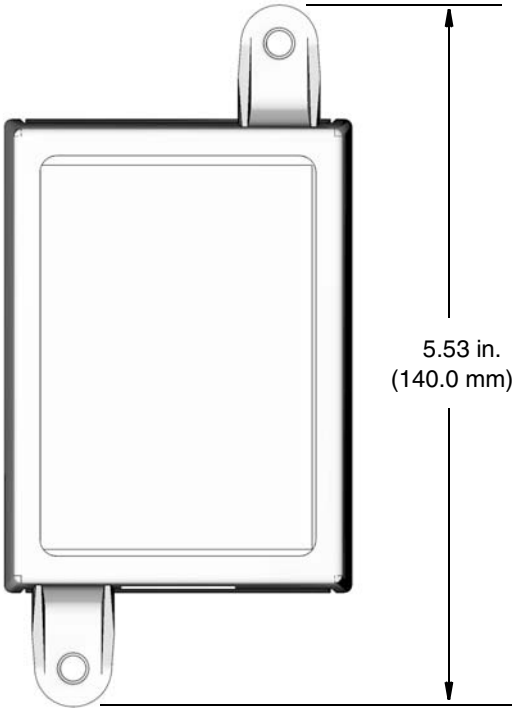
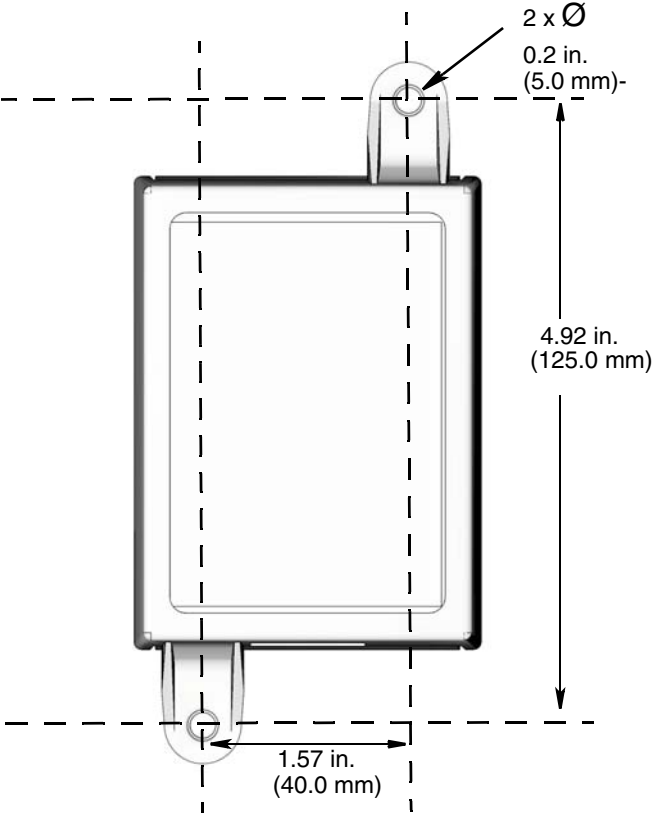
Technical Data

Input Contact	
Power Source DC	9 - 30 VDC
Power Consumption	1 Watt
Cycle/Pressure Control Input (optional)	9 - 30 VDC, Normally open Pressure or cycle switch
Lubrication level (optional)	Normally open level switch, closes upon low level
Outputs	
Pump control	Pump Control Voltage = Power Source
Voltage	Pump Control Voltage = Power Source
Max Switching Voltage	30 VDC
Max Switching Current	9A (DC)
Min Switching Current	100 mA (DC)
Alarm, normally open	
Voltage	Alarm = Power Source
Max Switching Voltage	30 VDC
Max Switching Current	2A (DC)
Protection grade	IP54 for indoors and vehicle cab use
Alarm Sound Pressure Level	75 dB
Enclosure Material	ABS
Membrane Material	Polyester
Maximum Humidity	90% RH (non-condensing)
Operating temperature range	- 40°F to 176°F (- 40°C to 80°C)
Storage Temperature	- 40°F to 176°F (- 40°C to 80°C)

Dimensions



Mounting Hole Layout



Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

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Graco Information

TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.

Phone: 612-623-6928 or **Toll Free:** 1-800-533-9655, **Fax:** 612-378-3590

*All written and visual data contained in this document reflects the latest product information available at the time of publication.
Graco reserves the right to make changes at any time without notice.*

For patent information, see www.graco.com/patents.

Original instructions. This manual contains English. MM3A2960

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